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09/673,532	11/27/2000	Tetsujiro Kondo	450101-02344	7536

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EXAMINER

SHIBRU, HELEN

ART UNIT PAPER NUMBER

2621

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/673,532	KONDO ET AL.	
	Examiner	Art Unit	
	HELEN SHIBRU	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27, 37-42, 49-57, 64, 66-68, 70-72 and 75 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27, 37-42, 49-57, 64, 66-68, 70-72 and 75 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Response to Amendment

1. The amendment filed on 10/25/2006 has been entered and made of record. Claims 1-27, 37-42, 49-57, 64, 66-68, 70-72 and 75 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-27, 37-42, 49-57, 64, 66-68, 70-72 and 75 are pending have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 1-5, 7, 10-14, 16, 37-40, 49-54, and 64, 66-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al (US 5,469,216) in view of Vincent et al. (US Pat. No. 5,436,659) and further in view of Dischert (US Pat. No. 4,499,494).

Regarding claim 1, Takahashi et al discloses an image-signal processing apparatus (Fig. 1) for processing an input image signal at a position of each pixel, said input image signal having any one of various color components, said apparatus comprising:

extraction means (class code circuit 3 of Fig. 1, col. 3, lines 44 to col. 4, line 10) for extracting a plurality of pixels located near each pixel of interest of the image signal;

class-determining means (class code circuit 3 of Fig. 1, col. 3, lines 44 to col. 4, line 10) for determining a class from the pixels extracted by the extraction means; and

pixel-generating means (predicting circuit 5 of Fig. 1, col. 3, lines 33-42) for generating a pixel at a position of the pixel of interest in accordance with the class determined by the class-determining means, said pixel having a color component different from at least the color component of the pixel of interest,

wherein the plurality of pixels extracted by the extraction means and used by the class determining means includes at least one pixel that is not adjacent to the pixel of interest (col. 3, lines 44-60 and col. 4, lines 50-63).

Claim 1 differs from Takahashi in that the claim further requires defect-correcting means for correcting defective pixels in the input image signal.

In the same field of endeavor Vincent discloses a digital imaging system (see col. 4 lines 52-64 and fig. 1). Vincent teaches defect correction block which identifies the location of defective pixels in the image so they can be corrected (see col. 8 lines 30-58). Therefore in light

of the teaching in Vincent it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takahashi by providing defect correcting means in order to correct defective images.

Claim 1 further differs from the proposed combination of Takahashi and Vincent in that the claim further requires clamping means for clamping the input image signal to eliminate shifted components of the defect-corrected image signal.

In the same field of endeavor Dischert discloses correcting non-linearity of signals. Dischert teaches it is common to clamp video signal (see col. 1 lines 9-32). Dischert further discloses the gamma corrector reduces or eliminates the perturbation of the signal by reducing or eliminating noise near the black level (see fig. 2 and col. 2 line 62-col. 3 line 11). Dischert further discloses clamping means is coupled to source of synchronizing signals, source of television signals, and source of reference voltage source for clamping particular signal amplitude thereby producing a clamped television signal (see claim 1). Therefore in light of the teaching in Dischert, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the proposed combination of Takahashi and Vincent by including clamping means in order to reduce the noise level.

Regarding claim 2, Takahashi et al discloses the claimed characterized in that the pixel-generating means generates a pixel having all color components at the position of the pixel of interest (col. 4, lines 50-63).

Regarding claim 3, Takahashi et al discloses the claimed characterized in that the pixel-generating means comprises storage means for storing a set of prediction coefficients for each class and operation means for performing an operation on a set of prediction coefficients which

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corresponds to the class determined by the class-determining means and the pixels located near the pixel of interest which have been extracted by the extraction means, thereby to generate a pixel having a color component different from at least the color component of the pixel of interest (coefficient memory 4 of Fig. 1, col. 4, line 64 to col. 5, line 40).

Regarding claim 4, Takahashi et al discloses the claimed characterized in that the operation means performs an operation on a linear combination of the set of prediction coefficients and the values of the pixels located near the pixel of interest (col. 5, line 60 to col. 6, line 58).

Regarding claim 5, Takahashi et al discloses the claimed characterized in that the extraction means extracts at least one different pixel and supplies the same to the class-determining means and the operation means (block segmenting circuit 2 and class code circuit 3 of Fig. 1, col. 3, lines 15-43).

Regarding claim 7, Takahashi et al discloses the claimed characterized by further comprising acquisition means for acquiring an image signal having a pixel at each pixel position, said pixel having one of various color components (Fig. 2, col. 3, lines 44-60).

Method claims 10-14 and 16 are rejected for the same reasons as discussed in apparatus claims 1-5 and 7 above.

Regarding claim 37, Takahashi et al discloses an image-signal processing apparatus for processing an input image signal, said input image signal having a prescribed number of sample values which constitute one image and each of which represents any one of various colors at each pixel, said apparatus comprising:

extraction means (class code circuit 3 of Fig. 1, col. 3, lines 44 to col. 4, line 10) for extracting a plurality of pixels located near each pixel of interest of the input image signal;

class-determining means (class code circuit 3 of Fig. 1, col. 3, lines 44 to col. 4, line 10) for determining a class from the pixels extracted by the extraction means; and

output image-signal generating means (predicting circuit 5 of Fig. 1, col. 2, lines 32-44 and col. 3, lines 33-42) for generating an output image signal having more sample values than the prescribed number, for the various colors, by processing each pixel of the input image signal in accordance with the class determined by the class-determining means,

wherein the plurality of pixels extracted by the extraction means and used by the class determining means includes at least one pixel that is not adjacent to the pixel of interest (col. 3, lines 44-60 and col. 4, lines 50-63).

Claim 37 differs from Takahashi in that the claim further requires defect-correcting means for correcting defective pixels in the input image signal.

In the same field of endeavor Vincent discloses a digital imaging system (see col. 4 lines 52-64 and fig. 1). Vincent teaches defect correction block which identifies the location of defective pixels in the image so they can be corrected (see col. 8 lines 30-58). Therefore in light of the teaching in Vincent it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takahashi by providing defect correcting means in order to correct defective images.

Claim 37 further differs from the proposed combination of Takahashi and Vincent in that the claim further requires clamping means for clamping the input image signal to eliminate shifted components of the defect-corrected image signal.

In the same field of endeavor Dischert discloses correcting non-linearity of signals. Dischert teaches it is common to clamp video signal (see col. 1 lines 9-32). Dischert further discloses the gamma corrector reduces or eliminates the perturbation of the signal by reducing or eliminating noise near the black level (see fig. 2 and col. 2 line 62-col. 3 line 11). Dischert further discloses clamping means is coupled to source of synchronizing signals, source of television signals, and source of reference voltage source for clamping particular signal amplitude thereby producing a clamped television signal (see claim 1). Therefore in light of the teaching in Dischert, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the proposed combination of Takahashi and Vincent by including clamping means in order to reduce the noise level.

Regarding claim 38, Takahashi et al discloses the claimed characterized in that the output image-signal generating means comprises storage means for storing a set of prediction coefficients for each class and operation means for performing an operation on a set of prediction coefficients which corresponds to the class determined by the class-determining means and the pixels located near the pixel of interest which have been extracted by the extraction means, thereby to generate the output image signal (coefficient memory 4 of Fig. 1, col. 4, line 64 to col. 5, line 40).

Method claims 39-40 are rejected for the same reasons as discussed in apparatus claims 37-38 above.

Regarding claim 49, Takahashi et al discloses an image-signal processing apparatus (Fig. 1) for processing an input image signal at a position of each pixel, said input image signal having any one of various color components, said apparatus comprising:

extraction means (class code circuit 3 of Fig. 1, col. 3, lines 44 to col. 4, line 10) for extracting a plurality of pixels located near each pixel of interest of the input image signal, each pixel having a color component of the highest density of all color components;

class-determining means (class code circuit 3 of Fig. 1, col. 3, lines 44 to col. 4, line 10) for determining a class from the pixels extracted by the extraction means; and

pixel-generating means (predicting circuit 5 of Fig. 1, col. 2, lines 32-44 and col. 3, lines 33-42) for generating a pixel at a position of the pixel of interest in accordance with the class determined by the class-determining means, said pixel having a color component different from at least the color component of the pixel of interest,

wherein the plurality of pixels extracted by the extraction means and used by the class determining means includes at least one pixel that is not adjacent to the pixel of interest (col. 3, lines 44-60 and col. 4, lines 50-63).

Claim 49 differs from Takahashi in that the claim further requires defect-correcting means for correcting defective pixels in the input image signal.

In the same field of endeavor Vincent discloses a digital imaging system (see col. 4 lines 52-64 and fig. 1). Vincent teaches defect correction block which identifies the location of defective pixels in the image so they can be corrected (see col. 8 lines 30-58). Therefore in light of the teaching in Vincent it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takahashi by providing defect correcting means in order to correct defective images.

Claim 49 further differs from the proposed combination of Takahashi and Vincent in that the claim further requires clamping means for clamping the input image signal to eliminate shifted components of the defect-corrected image signal.

In the same field of endeavor Dischert discloses correcting non-linearity of signals. Dischert teaches it is common to clamp video signal (see col. 1 lines 9-32). Dischert further discloses the gamma corrector reduces or eliminates the perturbation of the signal by reducing or eliminating noise near the black level (see fig. 2 and col. 2 line 62-col. 3 line 11). Dischert further discloses clamping means is coupled to source of synchronizing signals, source of television signals, and source of reference voltage source for clamping particular signal amplitude thereby producing a clamped television signal (see claim 1). Therefore in light of the teaching in Dischert, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the proposed combination of Takahashi and Vincent by including clamping means in order to reduce the noise level.

Regarding claim 50, Takahashi et al discloses the claimed characterized in that the pixel-generating means comprises storage means for storing a set of prediction coefficients for each class and operation means for performing an operation on a set of prediction coefficients which corresponds to the class determined by the class-determining means and the pixels located near the pixel of interest which have been extracted by the extraction means, thereby to generate a pixel having the different color component (coefficient memory 4 of Fig. 1, col. 4, line 64 to col. 5, line 40).

Regarding claim 51, Takahashi et al discloses the claimed characterized in that the pixel-generating means generates a pixel having all color components at the position of the pixel of interest (col. 4, lines 50-63).

Method claims 52-54 are rejected for the same reasons as discussed in apparatus claims.

Regarding claim 64, Takahashi et al discloses an image-signal processing apparatus (Fig. 1) for processing an input image signal at a position of each pixel, said input image signal having any one of various color components, said apparatus comprising:

extraction means (class code circuit 3 of Fig. 1, col. 3, lines 44 to col. 4, line 10) for extracting a plurality of pixels located near each pixel of interest of the input image signal;

class-determining means (class code circuit 3 of Fig. 1, col. 3, lines 44 to col. 4, line 10) including a characteristic-data generating section for generating characteristic data about the pixels of each color component, from the pixels of each color component which have been extracted by the extraction means, and a class-determining section for determining a class from the characteristic data generated for each color component; and

pixel-generating means (predicting circuit 5 of Fig. 1, col. 2, lines 32-44 and col. 3, lines 33-42) for generating a pixel in accordance with the class determined by the class-determining means, said pixel having a color component different from at least the color component of the pixel of interest,

wherein the plurality of pixels extracted by the extraction means and used by the class determining means includes at least one pixel that is not adjacent to the pixel of interest (col. 3, lines 44-60 and col. 4, lines 50-63).

Claim 64 differs from Takahashi in that the claim further requires defect-correcting means for correcting defective pixels in the input image signal.

In the same field of endeavor Vincent discloses a digital imaging system (see col. 4 lines 52-64 and fig. 1). Vincent teaches defect correction block which identifies the location of defective pixels in the image so they can be corrected (see col. 8 lines 30-58). Therefore in light of the teaching in Vincent it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takahashi by providing defect correcting means in order to correct defective images.

Claim 64 further differs from the proposed combination of Takahashi and Vincent in that the claim further requires clamping means for clamping the input image signal to eliminate shifted components of the defect-corrected image signal.

In the same field of endeavor Dischert discloses correcting non-linearity of signals. Dischert teaches it is common to clamp video signal (see col. 1 lines 9-32). Dischert further discloses the gamma corrector reduces or eliminates the perturbation of the signal by reducing or eliminating noise near the black level (see fig. 2 and col. 2 line 62-col. 3 line 11). Dischert further discloses clamping means is coupled to source of synchronizing signals, source of television signals, and source of reference voltage source for clamping particular signal amplitude thereby producing a clamped television signal (see claim 1). Therefore in light of the teaching in Dischert, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the proposed combination of Takahashi and Vincent by including clamping means in order to reduce the noise level.

Regarding claim 65, Takahashi et al discloses the claimed characterized in that the characteristic-data generating section generates, as the characteristic data, a space activity of the pixels of each color component, which have been extracted by the extraction means (class code circuit 3 of Fig. 1, col. 3, lines 44 to col. 4, line 10).

Regarding claim 66, Takahashi et al discloses the claimed characterized in that the characteristic-data generating section generates the space activity by performing of ADRC (Adaptive Dynamic Range Coding) process on the pixels of each color component (col. 1, lines 39-50).

Regarding claim 67, Takahashi et al discloses the claimed characterized in that the extraction means extracts the pixels corresponding to each color component from pixels existing in a region near the pixel of interest (class code circuit 3 of Fig. 1, col. 3, lines 44 to col. 4, line 10).

Method claims 68-71 are rejected for the same reasons as discussed in apparatus claims 64-67 above.

5. Claims 19-23, 25, 41-42, 55-57, and 72, 74-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al (US 5,469,216) in view of Vincent et al. (US Pat. No. 5,436,659) Dischert (US Pat. No. 4,499,494), and further in view of Official Notice.

Regarding claim 19, Takahashi as further modified by Vincent discloses all the claimed limitations as discussed in claim 1 above except for providing a recording medium storing a computer program.

It is noted that using microprocessor with ROM for processing video signal is old and well known in the art and; therefore, Official Notice is taken.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the well known microprocessor and ROM into Takahashi et al's system in order to simplify and accurately process the video signal.

Claims 20-23 and 25 are rejected for the same reasons as discussed in claims 2-5 and 7 above.

Regarding claim 41, Takahashi as further modified by Vincent discloses all the claimed limitations as discussed in claim 39 above except for providing a recording medium storing a computer program.

It is noted that using microprocessor with ROM for processing video signal is old and well known in the art and; therefore, Official Notice is taken.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the well known microprocessor and ROM into Takahashi et al's system in order to simplify and accurately process the video signal.

Claim 42 is rejected for the same reasons as discussed in claim 40 above.

Regarding claim 55, Takahashi as further modified by Vincent discloses all the claimed limitations as discussed in claim 52 above except for providing a recording medium storing a computer program.

It is noted that using microprocessor with ROM for processing video signal is old and well known in the art and; therefore, Official Notice is taken.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the well known microprocessor and ROM into Takahashi et al's system in order to simplify and accurately process the video signal.

Claims 56-57 are rejected for the same reasons as discussed in claims 53-54 above.

Regarding claim 72, Takahashi as further modified by Vincent discloses all the claimed limitations as discussed in claim 64 above except for providing a recording medium storing a computer program.

It is noted that using microprocessor with ROM for processing video signal is old and well known in the art and; therefore, Official Notice is taken.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the well known microprocessor and ROM into Takahashi et al's system in order to simplify and accurately process the video signal.

Claims 74-75 are rejected for the same reasons as discussed in claims 66-67 above.

6. Claims 6, 8-9, 15, 17-18, 24 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al (US 5,469,216) in view of Vincent et al. (US Pat. No. 5,436,659) and further in view of Kndo et al (US 5,748,235).

Regarding claim 6, Takahashi as further modified by Vincent discloses all the claimed limitations as discussed in claim 1 above except for providing the claimed characterized in that the color component represent a color of red, blue, or green.

Kondo et al teaches that the capability of converting standard definition to high definition can be applied to color image generated from CCD (col. 4, lines 30-44).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the generating of color image generated from CCD as taught by Kondo et al into Takahashi et al's system in order to convert color image to high definition.

Regarding claim 8, Kondo et al discloses the claimed characterized in that the acquisition means is a solid-state imaging element (col. 4, lines 30-44).

Regarding claim 9, the proposed combination of Takahashi, Vincent, and Kondo disclose all the claimed limitations except for providing the claimed characterized in that the solid-state imaging element is a CCD image sensor of the Bayer arrangement.

It is noted that the CCD image sensor of the Bayer arrangement is old and well known in the art and; therefore, Official Notice is taken.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the well known CCD image sensor of the Bayer arrangement into Kondo et al's system since it merely amounts to selecting readily available CCD.

Claims 15 and 17-18 are rejected for the same reasons as discussed in claims 6 and 8-9 above.

Claims 24 and 26-27 are rejected for the same reasons as discussed in claims 6 and 8-9 above.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yamaguchi et al. (US PAT. NO. 6,342,921).

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8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

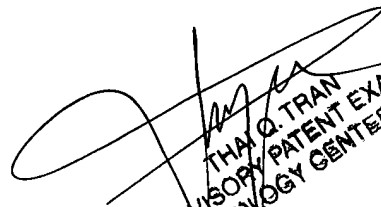
Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELEN SHIBRU whose telephone number is (571) 272-7329. The examiner can normally be reached on M-F, 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, THAI Q. TRAN can be reached on (571) 272-7382. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Helen Shibru
November 27, 2006


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